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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,060	04/03/2001	Koji Shimazawa	109164	9270

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EXAMINER
DAVIS, DAVID DONALD

ART UNIT	PAPER NUMBER
2652	7

DATE MAILED: 09/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/824,060	Applicant(s) SHIMAZAWA ET AL.
	Examiner David D. Davis	Art Unit 2652

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 12-17* is/are rejected.

7)☒ Claim(s) *10 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. Receipt is acknowledged of the Information Disclosure Statement (IDS) received June 4, 2001.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-9 and 12-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Dill et al (US 5,898,548). As per claim 1, Dill et al shows in figures 4A and 4B a tunnel magnetoresistive effective element includes a ferromagnetic tunnel effective film 100, a magnetic bias means 150, a first conductive layer , and a second conductive layer 104. The

ferromagnetic tunnel effective film 100 has a free layer 132, a pinned layer 118 and a tunnel barrier layer 120 sandwiched between the free layer 132 and the pinned layer 118. The magnetic bias means 150 applies a bias magnetic field to the free layer 132. The first conductive layer is formed on one surface of the ferromagnetic tunnel effective film 100 so as to be electrically conducted to the ferromagnetic tunnel effective film 100. The second conductive layer 104 is formed on the other surface of the ferromagnetic tunnel effective film 100 to be electrically conducted to the ferromagnetic tunnel effective film 100. At least one of the first conductive layer and the second conductive layer 104 generate a magnetic field having the same direction as that of the bias magnetic field through a sense current therein.

As per claim 2, the first conductive layer of Dill et al includes a first electrode 102 / magnetic shielding portion S1 and a first leading electrode portion. The first electrode 102/magnetic shielding portion S1 is provided on the one surface of the ferromagnetic tunnel effective film 100 and the first leading electrode portion is electrically conducted to a part of the first electrode 102/magnetic shielding portion S1 at a position in which a magnetic field having the same direction as the bias magnetic field is generated by a sense current in the first electrode 102/magnetic shielding portion S1 As per claim 3, the first leading electrode portion of Dill et al, also shown in figures 4A and 4B is electrically conducted to the part of the first electrode 102/magnetic shielding portion S1 at a position, along the bias magnetic field direction, apart from a center line of the ferromagnetic tunnel effective film 100 orthogonal to the bias magnetic field.

As per claim 4, Dill et al additionally shows the second conductive layer 104 includes a second electrode/magnetic shielding portion S2 and a second leading electrode portion, and the

second electrode/magnetic shielding portion S2 is provided on the other surface of the ferromagnetic tunnel effective film 100. The second leading electrode portion is electrically conducted to a part of the second electrode/magnetic shielding portion S2 at a position in which a magnetic field having the same direction as that of the bias magnetic field is generated by a sense current in the second electrode/magnetic shielding portion S2.

As per claim 5, Dill et al further shows the second leading electrode portion electrically conducted to the part of the second electrode/magnetic shielding portion S2 at a position, along the bias magnetic field direction, apart from the center line of the ferromagnetic tunnel effective film 100 orthogonal to the bias magnetic field. As per claim 6, the first leading electrode portion and the second leading electrode portion of Dill et al, as shown in figures 4A and 4B are provided in respective different sides from the center line of the ferromagnetic tunnel effective film 100.

As per claim 7, Dill et al even further shows the first leading electrode portion and the second leading electrode portion provided in either side from the center line of the ferromagnetic tunnel effective film 100. As per claim 8, Dill et al still even further shows in figure 4A and 4B a planer angle of a line segment to a first center point of a boundary line between the first electrode 102/magnetic shielding portion S1 and the first leading electrode portion from a center point of the ferromagnetic tunnel effective film 100 for the bias magnetic field direction or a planer angle of a line segment to a second center point of a boundary line between the second electrode/magnetic shielding portion S2 and the second leading electrode portion from the center point of the ferromagnetic tunnel effective film 100 for the bias magnetic field direction is set to 5 degrees or over.

As per claim 9, Dill et al shows in figures 4A and 4B the magnetic bias means 150 including a bias magnetic field-inductive layer to apply a given bias magnetic field to the free layer 132 of the ferromagnetic tunnel effective film 100 and a magnetic bias applying means to apply a given magnetic field to the bias magnetic field-inductive layer.

As per claim 12, Dill et al shows in figure 3 a thin film magnetic head including at least one reading element composed of a tunnel magnetoresistive effective element as. As per claim 13, Dill et al also shows in figure 3 the thin film magnetic head including at least one writing element. As per claim 14, Dill et al additionally shows in figure 3 that the writing element is composed of an inductive type electromagnetic converting element including a first magnetic film, a second magnetic film and a gap film. The forefronts of the first magnetic film and the second magnetic film are separated by the gap film, thereby to constitute a writing pole portion. As per claim 15, Dill further shows in figure 3 the writing element composed of an inductive type electromagnetic converting element including a first magnetic film and a second magnetic film having a main magnetic pole portion to constitute a perpendicular writing pole portion and a supplementary magnetic pole portion to magnetically combine the main magnetic pole portion and the first magnetic film.

As per claim 16, the magnetic head device of Dill also includes a thin film magnetic head and a head supporting device to support the thin film magnetic head. As per claim 17, the magnetic recording drive device of Dill et al additionally includes a magnetic head device and a magnetic disk to be magnetically recorded and reproduced by the magnetic head device.

Allowable Subject Matter

6. Claims 10 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is (703) 308-1503. The examiner can normally be reached on Mon., Tues., Thurs. and Fri. between 7:30-6:00. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900. Any other inquiry should be directed to the customer service center whose telephone number is (703) 306-0377.

David D. Davis
Primary Examiner
Art Unit 2652

ddd
September 24, 2003